

**CLAIMS**

1. A transponder for an electronic radio frequency identification system comprising:

- 5           - an antenna having an antenna impedance at a feedpoint thereof;
- an electronic circuit having an input impedance at an input thereof, the input being connected to the feedpoint; and
- the antenna impedance having impedance characteristics for developing first and second voltage maxima across the input at first and second frequencies respectively, thereby to provide a continuous operative frequency band for the transponder including the first and second frequencies.

- 10           2. A transponder as claimed in claim 1 wherein the input impedance comprises a real component and a capacitive reactive component.

- 15           3. A transponder as claimed in claim 2 wherein an inductive element is connected between the antenna and the circuit in parallel with the input impedance and which is operative to resonate with the capacitive component of the input impedance.
- 20           4. A transponder as claimed in claim 2 wherein the real component of the input impedance is at least 400 ohms.

5. A transponder as claimed in claim 1 wherein the first frequency is between 850 MHz and 900 MHz and the second frequency is between 900 MHz and 1 GHz.

- 5 6. A transponder as claimed in claim 1 wherein the antenna comprises one of a combination of a patch antenna and a transmission line both connected to the feedpoint, a combination of a shorted ring patch antenna and a transmission line both connected to the feedpoint, and a combination of a loop and an appendage to the loop.

- 10 7. A transponder as claimed in claim 1 wherein the first and second frequencies are associated with first and second dimensions of the antenna and wherein the first and second frequencies are selectable by selection of the first and second dimensions.

- 15 8. An antenna for a transponder of an electronic identification system, the antenna having an antenna impedance at a feedpoint thereof, the antenna impedance having impedance characteristics for developing first and second voltage maxima at first and second frequencies respectively across an input impedance of the transponder.
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9. An antenna as claimed in claim 8 comprising one of a combination of a patch antenna and a transmission line both connected to the

feedpoint, a combination of a shorted ring patch antenna and a transmission line both connected to the feedpoint, and a combination of a loop and an appendage to the loop.

5 10. An antenna as claimed in claim 9 wherein the antenna comprises a combination of a first loop and an appendage to the first loop and wherein the appendage comprises a second loop linked to the first loop.

10 11. An electronic radio frequency identification system comprising a reader and at least one transponder as claimed in claim 1.